AMENDMENTS TO THE CLAIMS:

This listing of the claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

23. (Canceled)

24. (Canceled)

25. (Currently Amended) A method of performing a coarse frequency synchronization compensation for a carrier frequency deviation from an oscillator frequency in a demodulation system capable of demodulating a signal having a frame structure, said frame structure comprising at least one useful symbol and a reference symbol, said reference symbol being an amplitude-modulated bit sequence which comprises two identical sequences, said method comprising the steps of:
receiving said signal;
down-converting said received signal;
performing an amplitude-demodulation of the down-converted signal in order to generate an envelope, said envelope having two portions which are based on said identical sequences;
correlating one of said portions of said envelope with another one of said portions in order to determine said carrier frequency deviation; and
controlling said oscillator frequency based on said carrier frequency deviation;
wherein said correlating step further comprises weighting of corresponding values of said two portions with corresponding values of said two sequences.

26. (Canceled)

27. (Currently Amended) The method of claim [[26]]25, wherein said carrier frequency deviation is determined as follows:

$$\Delta f = \frac{1}{2\pi \frac{L}{2} T_{MCM}} \arg\left(\sum_{k=1}^{\frac{L}{2}} \tilde{r}\left(k+\frac{L}{2}\right) \cdot \tilde{r}^{*}(k) \right) - \frac{1}{2\pi \frac{L}{2} T_{MCM}} \arg\left(\sum_{k=1}^{\frac{L}{2}} \left|\tilde{r}(k)\right|^{2} \right)$$

~~$$\Delta f = \frac{1}{2\pi \frac{L}{2} T_{MCM}} \arg\left(\sum_{k=1}^{\frac{L}{2}} \tilde{r}\left(k+\frac{L}{2}\right) \cdot \tilde{r}^{*}(k) \right)$$~~

wherein $\tilde{r}$ designates values of said portions;

$\tilde{r}^{*}$ designates the complex conjugate of said values of said portions;

T_{MCM} designates the duration of said useful symbol;

k designates an index; and

L designates the number of values of said two sequences of said reference symbol.

28. (Currently Amended) The method of claim ~~26~~25, wherein said carrier frequency deviation is determined as follows:

$$\Delta f = \frac{1}{2\pi \frac{L}{2} T_{MCM}} \arg\left(\sum_{k=1}^{\frac{L}{2}} \left[\tilde{r}\left(k+\frac{L}{2}\right) \cdot \tilde{r}^{*}(k) \right] \cdot \left[S_{AM}(k) S_{AM}^{*}\left(k+\frac{L}{2}\right) \right] \right)$$

wherein $\tilde{r}$ designates values of said portions;

$\tilde{r}^*$ designates the complex conjugate of said values of said portions;

T_{MCM} designates the duration of said useful symbol;

k designates an index;

L designates the number of values of said two sequences of said reference symbol;

S_{AM} designates values of said identical sequences; and

S^*_{AM} designates the complex conjugate of said values of said identical sequences.

29. (Currently Amended) The method according to claim ~~23~~25, wherein said signal is an orthogonal frequency division multiplex signal.

30. (Currently Amended) The method according to claim ~~23~~25, further comprising the step of performing a fast automatic gain control of said received down-converted signal prior to the step of performing said amplitude-demodulation.

31. (Currently Amended) The method according to claim ~~23~~25, wherein the step of performing said amplitude-demodulation comprises the step of calculating an amplitude of said signal using the $alpha_{max+}$ $beta_{min-}$ method.

32. (Currently Amended) The method according to claim ~~23~~25, further comprising the steps of sampling respective amplitudes of said received down-converted signal and comparing said sampled amplitudes with a predetermined threshold in

order to generate a bit sequence in order to perform said amplitude-demodulation.

33. (Original) The method according to claim 32, wherein the step of sampling respective amplitudes of said received down-converted signal further comprises the step of performing an over-sampling of said received down-converted signal.

34. (Canceled)

35. (Canceled)

36. (Currently Amended) An apparatus for performing a coarse frequency synchronization compensation for a carrier frequency deviation from an oscillator frequency, for a demodulation system capable of demodulating a signal having a frame structure, said frame structure comprising at least one useful symbol and a reference symbol, said reference symbol being an amplitude-modulated bit sequence which comprises two identical sequences, said apparatus comprising:
receiving means for receiving said signal;
a down-converter for down-converting said received signal;
an amplitude-demodulator for performing an amplitude-demodulation of said down-converted signal in order to generate an envelope, said envelope having two portions which are based on said identical sequences;
a correlator for correlating one of said portions of said envelope with another one of said portions in order to determine said carrier frequency deviation; and
means for controlling said oscillator frequency based on said carrier frequency deviation;
wherein said correlator comprises means for weighting of corresponding values of said two portions with corresponding values of said two sequences.

37. (Canceled)

38. (Currently Amended) The apparatus of claim ~~35~~36, comprising means for determining said carrier frequency deviation as follows:

$$\Delta f = \frac{1}{2\pi \frac{L}{2} T_{MCM}} \arg\left(\sum_{k=1}^{\frac{L}{2}} \tilde{r}\left(k + \frac{L}{2}\right) \cdot \tilde{r}^*(k) \right) - \frac{1}{2\pi \frac{L}{2} T_{MCM}} \arg\left(\sum_{k=1}^{\frac{L}{2}} |\tilde{r}(k)|^2 \right)$$

~~$$\Delta f = \frac{1}{2\pi \frac{L}{2} T_{MCM}} \arg\left(\sum_{k=1}^{\frac{L}{2}} \tilde{r}\left(k + \frac{L}{2}\right) \cdot \tilde{r}^*(k) \right)$$~~

wherein [[r]] $\tilde{r}$ designates values of said portions;

$\tilde{r}^*$ designates the complex conjugate of said values of said portions;

T_{MCM} designates the duration of said useful symbol;

k designates an index; and

L designates the number of values of said two sequences of said reference symbol.

39. (Currently Amended) The apparatus of claim ~~37~~36, comprising means for determining said carrier frequency deviation as follows:

$$\Delta f = \frac{1}{2\pi \frac{L}{2} T_{MCM}} \arg\left(\sum_{k=1}^{\frac{L}{2}} \left[\tilde{r}\left(k + \frac{L}{2}\right) \cdot \tilde{r}^{*}(k) \right] \cdot \left[S_{AM}(k) S_{AM}^{*}\left(k + \frac{L}{2}\right) \right] \right)$$

wherein $\tilde{r}$ designates values of said portions;

$\tilde{r}^{*}$ designates the complex conjugate of said values of said portions;

T_{MCM} designates the duration of said useful symbol;

k designates an index;

L designates the number of values of said two sequences of said reference symbol;

S_{AM} designates values of said identical sequences; and

S_{AM}^{*} designates the complex conjugate of said values of said identical sequences.

40. (Currently Amended) The apparatus according to claim ~~35~~36, wherein said signal is an orthogonal frequency division multiplexed signal.

41. (Currently Amended) The apparatus according to claim ~~35~~36, further comprising means for performing a fast automatic gain control of said received down-converted signal preceding said amplitude-demodulator.

42. (Currently Amended) The apparatus according to claim ~~35~~36, wherein said amplitude-demodulator comprises means for calculating an amplitude of said signal using the $alpha_{max+}$ $beta_{min-}$ method.

43. (Currently Amended) The apparatus according to claim ~~35~~36, further comprising means for sampling respective amplitudes of said received down-converted signal, wherein said amplitude-demodulator comprises means for comparing said sampled amplitudes with a predetermined threshold in order to generate a bit sequence.

44. (Original) The apparatus according to claim 43, wherein said means for sampling comprises means for over-sampling said received down-converted signal.